WHAT IS CLAIMED IS:

1. A method for dynamically controlling of a multiple actuator-sensor smart matter dynamic control system, comprising:

predicting future behavior of the multiple actuator-sensor smart matter dynamic control system using a plurality of control system models;

determining at least one control system model which is more successful than at least one other model of the plurality of models in predicting the future behavior of the multiple actuator-sensor smart matter dynamic control system;

increasing a weight of the at least one more successful control system model in the plurality of control system models used to predict future behavior of the multiple actuator-sensor smart matter dynamic control system relative to the weight of the at least one other model; and

using the at least one more successful control system model with the increased weight to control the multiple actuator-sensor smart matter dynamic control system.

2. The method of claim 1, wherein the plurality of control system models comprises N control system models and each of the N control system models is initially assigned a weight w_i such that

$$\sum_{i=1}^{N} w_i = 1 .$$

3. The method of claim 2, wherein using an i^{th} model includes investing a certain fraction a_i of the weight w_i of the i^{th} model, where $0 < a_i < 1$.

4. The method of claim 3, wherein each model is used to predict, at a current time t, a future state of the multiple actuator-sensor smart matter dynamic control system at a later time $(t+\Delta t)$:

$$\boldsymbol{x}_i\left(t+\Delta;\boldsymbol{x}(t),\boldsymbol{u}(t)\right).$$

5. The method of claim 4, wherein the invested amount is split between the N models according to the formula

$$w_i^{\text{new}} = (1-a)w_i^{\text{old}} + a\left[\frac{1/\left(e_i^2+\sigma^2\right)}{\sum_{i=1}^{N} 1/\left(e_i^2+\sigma^2\right)}\right]$$

6. The method of claim 1, further including repeating the steps within one or more selectable time periods.

7. The method of claim 1, further including the sum of prediction error over a finite interval

8. The method of claim 1, including the actuation and the error to weight new models.

9. A dynamical controller of a multiple actuator-sensor smart matter dynamical control system, comprising:

means to predict a future behavior of a multiple actuator-sensor smart matter dynamical control system using a plurality of control system models;

means determining at least one control system model which is more successful than other models in the plurality of models in predicting future behavior of the multiple actuator-sensor smart matter dynamical control system;

means increasing the weight of the at least one more successful control system model in the plurality of control system models used to predict future behavior of the multiple actuator-sensor smart matter dynamical control system; and

means using the at least one more successful control system model to control the multiple actuator-sensor smart matter dynamical control system.

10. The controller of claim 9, wherein the plurality of control system models comprises N control system models, and each of the N control system models is initially assigned a weight w_i such that

$$\sum_{i=1}^{N} w_i = 1$$

11. The controller of claim 9, wherein using an i_{th} model includes investing a certain fraction a_i of the weight w_i of the i^{th} model, where $0 < a_i < 1$.

12. The controller of claim 9, wherein each model is used to predict, at a current time t, a future state of the multiple actuator-sensor smart matter dynamical control system at a later time $(t + \Delta t)$:

$$\boldsymbol{x}_i(t + \Delta; \boldsymbol{x}(t), \boldsymbol{u}(t)).$$

13. The controller of claim 11, wherein the invested amount is split between the models according to the formula

$$w_i^{new} = (1\text{-}a)w_i^{old} + a\left[\frac{1/\left(e_i^{\,2}+\sigma^2\right)}{\sum_{j=1}^{N} 1/\left(e_j^{\,2}+\sigma^2\right)}\right]$$

14. A dynamical controller of a multiple actuator-sensor smart matter dynamical control system, comprising:

a prediction circuit usable to predict a future behavior of the multiple actuator-sensor smart matter dynamical control system using a plurality of control system models;

a success determination circuit usable to determine at least one control system model which is more successful than at least one other model in the plurality of models in predicting the future behavior of the multiple actuator-sensor smart matter dynamical control system;

a weight increasing circuit usable to increase the weight of the at least one more successful control system model relative to the at least one other model; and

a controller that uses at least the at least one more successful control system models to control the multiple actuator-sensor smart matter dynamical control system.

15. The controller of claim 14, wherein the plurality of control system models comprises N control system models; and each of the N control system models is initially assigned a weight w_i such that

$$\sum_{i=1}^{N} w_i = 1$$

16. The controller of claim 14, wherein using an i^{th} model includes investing a certain fraction a_i of the weight w_i of the i^{th} model, where, $0 < a_i < 1$.

17. The controller of claim 14, wherein each model is used to predict, at a current time t, a future state of the multiple actuator-sensor smart matter dynamical control system at a later time (t+Δt):

$$\boldsymbol{x}_i\left(t+\Delta;\boldsymbol{x}(t),\boldsymbol{u}(t)\right).$$

18. The controller of claim 16, wherein the invested amount is split between the models according to the formula

$$w_i^{new} = (1\text{-}a)\ w_i^{old} + a \left[\frac{1/\left(e_i{}^2 + \sigma^2\right)}{\sum_{j=1}^{N} 1/\left(e_j{}^2 + \sigma^2\right)} \right]$$